West American Mollusk Types at the British Museum (Natural History)

I. T. A. Conrad and the Nuttall Collection

BY

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(1 Text figure)

Up to the 1830's, descriptions of West Coast mollusks had been sporadic and somewhat incidental. Then in 1837 appeared a paper by Timothy A. Conrad entitled, "Descriptions of new marine shells from Upper California, collected by Thomas Nuttall, Esq." in the Journal of the Academy of Natural Sciences of Philadelphia. It had a special significance because it was the first paper dealing almost exclusively with the mollusks of this area and also because it described a collection made by a naturalist who realized the value of accurate locality records. Conrad's introductory statement that Mr. Nuttall had offered him the use of his material has been interpreted by modern workers to imply that the type specimens remained at Philadelphia. I, for example, searched for them there in 1940, without success. Later, Dr. Pilsbry located one shell that probably had been in Conrad's hands. Clues to the ultimate destination of the Nuttall collection were given in print by P. P. Carpenter (1857a, 1857b, 1864). However, as I shall show, there were reasons why we failed to realize that the most important part of the material did not remain in the United States. We were, of course, aware that Nuttall during his later years in England had a collection of shells, but the fact that it included the specimens Conrad had seen escaped us.

Idly looking at drawer labels of some stored collections at the British Museum (Natural History) one autumn morning in 1964, while awaiting the arrival of the Mollusca Section staff, I noticed several that said, "Nuttall Collection." Curious to see what Nuttall had, I opened a drawer and found a bonanza. Here were specimens Conrad must have seen because some of them could be recognized as the ones illustrated. This was the real core of the collection that Conrad had been permitted to examine.

A brief review of Nuttall's life throws light on some of the hitherto misunderstood relationships between Conrad and Nuttall. The facts given below were gleaned from encyclopedia articles and papers by Beidleman (1964), Alden & Ifft (1945), and others. Thomas Nuttall was born in England and was early apprenticed as a printer. His taste for natural history had not much opportunity for development until he came to the United States in 1808, at the age of 22. Influenced by naturalists he met at the Philadelphia Academy of Sciences, he studied botany and ornithology and went on several expeditions to the South and Middle West. Having published some well-prepared reports, he was appointed curator of the botanic garden at Harvard in 1825. This post he resigned in 1834, to set out on his greatest collecting trip, when, apparently without financial backing other than his own purse, he joined a trading-company group that was crossing the continent to Fort Walla Walla on the upper Columbia River, Oregon. From here he made his way to the seacoast at the mouth of the Columbia and took ship for California. Being a true naturalist, he collected not only botanical material but also such other items as sea-shells. He found a few of these in Oregon but made most of his collections at Monterey, Santa Barbara, and San Diego. He made a brief trip the next year to Hawaii, returned to California, and in 1836 was a passenger on the *Pilgrim* bound for the East Coast, via Cape Horn. If the boat put into ports along the Central American coasts, he had no opportunity to make collections; it is reported that he was indignant that the captain would not stop, in the midst of a gale, to let him go ashore at Cape Horn. Back on the East Coast he had no official position. For some time he was at the Philadelphia Academy. In a

letter written to the eminent botanist Asa Gray he said, concerning his collections, "... they have cost me a good deal of money, much time, and considerable risk . . . What I get for specimens is not like to remunerate me." From this we may surmise that he hoped to be able to sell some part of the material and obviously that he would be in no mood to donate the shells to the Academy; it was enough that he had given Conrad the privilege of describing them. That the Museum would have had funds for the purchase of sea shells is also unlikely. At that time, however, Dr. John C. Jay, a well-to-do amateur, was building one of the largest private collections in the country. CARPENTER (1857b, p. 193) records that Nuttall "transferred" (would it be that he sold?) to him the bulk of his shell material, with manuscript labels, some carrying the Conrad names, others Nuttall's own, especially for those forms not touched on by Conrad. These names are all included in the 1839 edition of JAY's "Catalogue," but as there were no descriptions or figures, the Nuttall names were *nomina nuda.* Jay also distributed the shells by exchange, notably to Hugh Cuming in England, another private collector with an even larger holding.

In 1842 Nuttall inherited some property in England that entailed his residence there; thus he returned to his native land. He continued to distribute shells with the same manuscript labels. For some reason he had not seen Conrad's actual publication, which remained such a rarity in European libraries that DESHAYES in 1839 unknowingly redescribed a number of the species. Upon getting settled in his home near Liverpool, Nuttall donated a part of his California material to the British Museum (Nat. Hist.); the Mollusca Section register shows that in December 1843 he contributed 22 lots.

When Carpenter in the 1850's was working on his report on the status of West American malacology, he visited Nuttall and took along a copy of the Conrad paper. With this and with Nuttall's counsel, he was enabled to draw up a list of some 118 species that Nuttall had taken — many more than Conrad had discussed, for Conrad did little with the gastropods and nothing with chitons. CARPENTER published his list in the British Association Report (1857b) and in a separate paper (1857a) on some of the species thought to be undescribed. In the latter (p. 209) he made the statement concerning the Conrad species, "The types are destined ultimately for the British Museum, where many of them are already to be found."

It would seem, therefore, that Carpenter had made a satisfactory final summation of the Nuttall material, yet in 1864 (p. 525), he again reviewed the matter, saying, "The verification of Conrad's species being of considerable importance, I made diligent search *for the original types* [italics mine] during a recent tour of the United States." He reported that he had talked to Jay and to Conrad and had tried (unsuccessfully) to examine the collection of this material at Harvard; Jay had already sent to the U. S. National Museum as many duplicates as he could spare. Carpenter then published a new summary, with a listing of the types that were not at the British Museum or that had been lost. It was no doubt this discussion that obscured in our minds the evidence given in his earlier reports.

Nuttall died in 1859, and as he had intended to donate his entire remaining collection to the British Museum, his executors, reminded by Carpenter, turned over the collection to the Museum. It was mounted on boards, and Carpenter's notes and identifications were pasted to the backs of the boards. None of the material was incorporated with the general collection, and it remains today one of the "historic collections" kept in special cabinets. I found in the general collection a few lots that Jay had traded to Cuming. These, of course, would also qualify as syntypes. As a matter of record I photographed all of the British Museum Conrad syntypes, but as none of the species involved represent any problems of identification, publishing the photographs here seems unnecessary. The wide distribution of Nuttall's duplicates enabled early authors to recognize the species correctly, and, too, Conrad's figures were adequate. The Jay collection went to the American Museum of Natural History but was not kept intact. As Conrad labelled none of the shells "type," present-day search is the more difficult. Possibly a few lots also may be found at Harvard or the United States National Museum. Advance tabulation of the summaries given below, sent to curators at these institutions, brought to light two lots of authentic specimens, both at the Philadelphia Academy. The British Museum (Natural History) remains the principal repository of the Conrad types, with representatives of 27 out of a possible 51 West Coast species. It is entirely possible that more may be found there, as obviously my time for search was limited. I consider most of the material found as syntypic because one can rarely be sure a given specimen is a figured holotype, although it is apparent Conrad must have seen the material while preparing his descriptions. Lectotypes may, of course, later be selected by workers who find need for precision.

A condensed format is used for the following summary. The names are rearranged in modern systematic order. Carpenter noted that Conrad's paper seemed to have been done hastily and that he did not attempt grouping.

For each entry, the original name combination stands first, followed, in square brackets, by the modern usage, if different. Type localities as cited by Conrad are here abbreviated, thus: Santa Barbara, Sta. B.; Monterey, Mont.; San Diego, S. D. Conrad's reference is cited briefly by page number, plate and figure number, thus: 242: 19 / 1. For material in the British Museum ("B. M."), the number of specimens, kind of type, and registry number are given. It is to be noted that these registry numbers indicate the exact date and the item number; thus, 55.12.6.76 means that the shell was the 76th specimen registered on December 6, 1855. Carpenter had a distinctive symbol for signing notes on labels, shown here as "PPC." An occasional label bears Nuttall's handwriting — "N." "Mus. Cum." refers to the Cuming collection, "ANSP" to the Academy of Natural Sciences of Philadelphia. Suggested locations, mostly as cited by Carpenter, are included. Hawaiian material is mentioned only in part, as it is to be reviewed later by Dr. Alison Kay. Conrad also described in this paper some species taken by others in areas not visited by Nuttall; these are omitted here.

Modiola capax [*Modiolus*]. Sta. B. 242: (no figure). Not found.

Modiola recta [*Modiolus*]. Sta. B. 243: 19 / 1. Gould coll., *fide* CARPENTER (1857 b, p. 197); possibly at U. S. National Museum or Harvard.

Mytilus bifurcatus [*Septifer*]. "Sandwich Is." (i. e. Hawaii; actually, California). 241: 18 / 14. ANSP, 1 pair, no. 57920.

Mytilus californianus. Sta. B., Mont., S. D. 242: 18 / 15. Not found. Gould coll., *fide* CARPENTER (1857 b, p. 198).

Perna costellata [*Isognomon*] Sandwich Is. (erroneously corrected to "Sta. B." by CARPENTER, 1857 b, p. 198). 246: (no figure). B. M., holotype no. 61.5.20.148. "PPC." "N."

Pecten latiauratus [*Leptopecten*]. Sta. B., S. D. 238: 18 / 9. B. M., 2 syntypes, 55.3.14.53 and 61.5.20.89 (possibly the figured shell). "N." [The ears in both specimens are less broad than shown in CONRAD's figure, REEVE, Conch. Icon., vol. 8, 1852, pl. 1, fig. 5 had a good figure of a Cuming syntype].

Pecten monotimeris [*Leptopecten*]. Sta. B., S. D. 238: 18 / 10. Not found.

Chama exogyra [*Pseudochama*]. Sta. B., S. D., etc. 256: (no figure). B. M., cluster of 5 syntypes, 61.5.20.155. [REEVE, Conch. Icon., vol. 4, 1847, pl. 7, fig. 38, figured a shell from Mus. Cum. that would also have been a syntype].

Lucina bella. "S. D." (actually, Hawaii).

Lucina californica [*Epilucina*]. S.D. 255: 20 / 1. Not in Nuttall coll., *fide* CARPENTER (1857 b, p. 197); possibly in Jay coll.

Lucina nuttalli [*Lucinisca*]. S. D. 255: 20 / 2. B. M., 2 syntypes, 61.5.20.87, one possibly the figured shell, its other side distorted. "N."

Cypricardia californica [*Trapezium*]. "S. D., Sta. B." (actually, Hawaii).

Cardium californianum [= *C. nuttallii, fide* CARPENTER]. Sta. B. 229: 17 / 4. Not found.

Cardium nuttallii [*Clinocardium*]. Columbia River, Oregon. 229: 17 / 3. ANSP, no. 54036, 1 pair.

Cardium quadragenarium [*Trachycardium (Dallocardia)*]. Sta. B. 230: 17 / 5. Not found. Not in Nuttall coll., *fide* CARPENTER (1857 b, p. 197).

Cardium substriatum [*Laevicardium*]. S. D. 228: 17 / 2. Not found.

Cytherea callosa [*Amiantis*]. Sta. B. 252: (no figure). Not found.

Trigonella crassatelloides [*Tivela (Pachydesma)*]. Sta. B., S. D. 253: 19 / 17. ANSP no. 53900, 1 pair labeled "California, Conrad."

Saxidomus nuttalli. S. D. 249: 19 / 12. B. M., 2 syntypes, one perhaps the figured shell, 43.12.6.76 and 55.3.14.48. "PPC."

Venus californiana "SOWERBY" [= *Chione californiensis* (BRODERIP, 1835)]. S. D. 251: 19 / 16. Not found.

Venus lamellifera [*Notirus*]. S. D. 251: 19 / 19. Not found. Mus. Cum., Nutt., Gould, *fide* CARPENTER (1857 b, p. 196).

Venus nuttalli [= *Chione californiensis* (BRODERIP, 1835)]. Sta. B., S. D. 250: 19 / 15 (not fig. 14, as cited). B. M., 2 syntype lots, 1 pair from Mus. Cum., with a Nuttall label and also one in Deshayes' writing, "California," and one pair from Sta. B., Nuttall coll., with note by Carpenter: "This is the true *V. nuttallii* Conr., *teste* Conr. *ipse* + type in Mus. Jay," a label evidently written after consultation with Conrad and Jay.

Venus staminea [*Protothaca*]. Sta. B., S. D. 250: 19 / 14 (not fig. 15, as cited). B. M., 2 syntype lots, one from each locality: Sta. B., 2 specimens. 55.3.14.40; S. D., 3, 65.5.20.123. "PPC."

Saxicava californica [=*Petricola carditoides* CONRAD]. Sta. B., S. D. 256: 20 / 9. Not found. In Gould and Cuming collections, *fide* CARPENTER, (1857 b, p. 196).

Saxicava carditoides [*Petricola*]. Sta. B. 255: 20 / 8. Not found. One valve in Nuttall coll.; also Gould coll.; *fide* CARPENTER (1857 b, p. 196).

Mactra californica. Sta. B. 240: 18 / 12. Not found. Gould coll., *fide* CARPENTER (1857 b, p. 196).

Mactra planulata [*Spisula*]. Sta. B. 240: (no fig.) Not found; type apparently lost, *fide* CARPENTER (1857 b, p. 196).

Lutraria (Cryptodon) nuttallii [*Tresus*]. Sta. B. 235: 18 / 1. Figured holotype, B. M. no. 61.5.30.134. "N." [A note by CARPENTER (1857 b, p. 194) indicates that Nuttall brought back only small specimens but that he observed larger ones. The holotype is a juvenile shell, evidently live-taken].

Donax californica. Sta. B. 254: 19 / 21. B. M., 12 syntypes, 61.5.20.91. "PPC." "N."

Tellina secta [*Macoma (Rexithaerus)*]. S. D. [note by Carpenter, "larger shell is from Columbia River"]. 257: (no fig.). B. M., 2 syntypes no. 61.5.21.161. "N."

Tellina nasuta [*Macoma (Macoma)*]. S. D. [Nuttall's label says, "Eaten by Chinhooks at the estuary of the Oregon," which would suggest mouth of the Columbia River as the locality.] 258: (no. fig.). B. M., syntype, no. 1861.5.21.158. "N." [The figure by SOWERBY in REEVE, Conch. Icon., vol. 17, 1866, pl. 9, fig. 40 of a specimen in "Mus. Sby." might almost have been made from the Nuttall shell].

Tellina alta [Homonym, not *T. alta* CONRAD, 1833; = *Florimetis biangulata* (CARPENTER, 1856) (see note below)]. Sta. B. 258: (no fig.). Type lost, *fide* CARPENTER (1857 b, p. 195). Carpenter suggests, probably correctly, that this may prove identical with his *Scrobicularia biangulata* (Proc. Zool. Soc. London for 1855, p. 230), later allocated to *Metis* (a homonym), to *Apolymetis* (the type of which is very different in form), and more recently to *Florimetis.* GRANT & GALE (1931, p. 364) pointed out that there might be two other prior names when the type specimens could be studied: *Tellina obesa* and *T. turgida* DESHAYES, 1855 (Proc. Zool. Soc. London for 1854, p. 354 [May 16, 1855]). The type lots for both of these are in the British Museum, and I have examined them. Although the type locality of the first was cited as "China Seas" and the second, "Catbalonga, Philippines," both lots seemed to me to be conspecific with Carpenter's holotype, which was also available for direct comparison and is a smaller, less mature shell, with the same hinge. Deshayes' material was from the Cuming collection. Although the description of *T. turgida* precedes that of *T. obesa,* it would seem better that the latter be selected, if either is to be adopted for the West American form. In 1903 HIDALGO cited *T. turgida* as from the Philippines, interpreting the locality as "Catbalogán, Samar I.," and FAUSTINO in 1928 followed this, in a check-list of Philippine mollusks. HIDALGO cited a figure by ROEMER, 1871, in the "Conchylien Cabinet," ed. 2, p. 210, pl. 40, figs. 7 - 9. I question the accuracy of this figure, for ROEMER does not state that it is of the type; he seems rather to have elaborated upon DESHAYES' description and to have figured a truly Philippine shell. Because of this confusion, it would be better not to attempt to bring *T. turgida* as the prior name into West American literature. A free translation of DESHAYES' description of *T. obesa* is: "Shell ovate-oblong, thick, solid, somewhat ventricose, nearly equilateral, grayish-white, bright yellow within, concentric striae uneven and growth lines thick, exaggerated at irregular intervals; anterior end broad, descending in an even curve, posterior end steeper, descending more sharply above, with a broad posterior fold distorting the outline, subtriangular in right valve; umbones large, orthogyrate, ligament large, thick, partially sunken in a groove; hinge thick, with two cardinal teeth of unequal size; adductor muscle scars large, the anterior ovate, the posterior rounded; the pallial sinus subtrapezoidal, expanded above and bent. Hab. China Seas. Coll. Cuming. Comparisons: Related to *T. lacunosa* but more tumid, thicker, yellow within, exterior with periostracum." A line drawing made from my photograph of the type lot is included as evidence of the similarity to the California species (Figure 1). The outline, size, and internal yellow color of mature specimens all point to the identification; moreover, the species to which DESHAYES compares it, *T. lacunosa* DILLWYN, 1817 (=*T. papyracea* GMELIN, 1791), is an Indo-Pacific *Florimetis.* However, the name *T. obesa* is, under the new International Rules of Zoological Nomenclature, a *nomen oblitum,* which we may not use until the case has been presented to the International Commission on Zoological Nomenclature for a decision as to whether its adoption would or would not promote stability. Because of continued opposition of many systematists to this

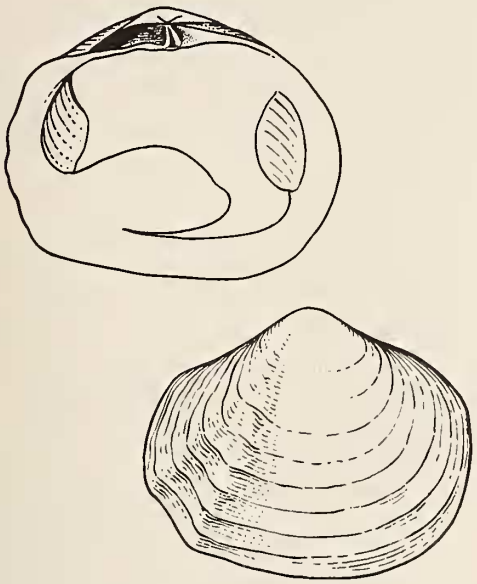

Figure 1

Tellina obesa DESHAYES, in the type collection, British Museum (Natural History); a composite drawing from photographs of two specimens, the outline from one, details of adductor scars and pallial line from the other. x 0.56

rule, such a requirement may later be relaxed. Meanwhile, I wish to put on record the fact that the name *Tellina obesa* DESHAYES, 1855, has priority over *Scrobicularia biangulata* CARPENTER, 1856, and that it is apparently available for use; that is, it seems not to be a homonym.

Cumingia californica. Sta. B. 234: 17 / 12. Not found. "Mus. Cum." *fide* CARPENTER (1857b, p. 195).

Amphidesma decisa [*Semele*]. S.D. 239: 19 / 2. B. M., 1 syntype, both valves, no. 61.5.20.137. "N." "PPC."

Amphidesma rubrolineata [*Semele*]. S. D. 239: 18 / 11. Not found. "Mus. Cum. and Gould coll.", *fide* CARPENTER (1857b, p. 195). DALL in 1915 considered the type lost and probably of Oriental origin.

Sanguinolaria californiana [=*Macoma inconspicua* (BRODERIP & SOWERBY, 1829), *fide* CARPENTER]. Columbia River. 231: 17 / 7. Not found. Synonymy suggested by CARPENTER (1864, p. 526).

Sanguinolaria nuttallii [*S. (Nuttallia)*]. S. D. 230: 17 / 6. B. M., 2 syntypes, Mus. Cum., without registry number.

Psammobia pacifica [=*Heterodonax bimaculatus* (LINNAEUS, 1758)]. S. D. 241: 18 /13. B. M., 2 syntypes, 61.5.20.92 and 61.5.20.93, the latter apparently the figured shell. "N."

Cultellus californianus [*Tagelus*]. Sta. B. 233: 18 / 3. B. M., one valve, no. 54.3.14.55, apparently the figured specimen. "N."

Cultellus subteres [*Tagelus (Mesopleura)*]. Sta. B. 233: 17 / 10. B. M., holotype, no. 61.5.20.125, both valves. "N."

Solecurtus lucidus [*Siliqua*]. Sta. B. 231: 17 / 8. B. M., 4 valves, all broken, 61.5.20.133(3), 57.8.14.2(1), with Carpenter label.

Solecurtus nuttallii [=*Siliqua patula* (DIXON, 1788)]. Columbia River. 232: 17 /9. Not found.

Sphenia californica [*Cryptomya*]. Sta. B. 234: 17 / 11. Not found.

Mya (Platyodon) cancellata [*Platyodon*]. Sta. B., etc. 236: 18 / 2, B. M., holotype, figured and evidently live-taken, with dried soft parts, no. 61.5.20.145. "N."

Pholas californica [*Parapholas*]. Sta. B. 236: 18 / 5. B. M., probable syntype, no. 61.5.21.157, without Carpenter label but with a note in Nuttall's writing: "In soft clay rocks in the bay of St. Diego, U. California." [Collectors of postmarks may be interested to know that the back of this slip of paper has a partly-effaced cancellation stamp with the words "Prescot-JA 1 / 1847" visible].

Pholas penita [*Penitella*]. Sta. B. 237: 18 / 7. Gould Coll., *fide* CARPENTER (1857b, p. 194).

Thracia curta. California. 248: 19 / 8. B. M., figured holotype, no. 61.5.20.135, with both valves (erroneously stated by CONRAD to be a single valve, corrected by CARPENTER, 1857b, p. 194). [Specimen matches figure well for size but has more sculpture; the posterior slope is not accurately drawn. Carpenter label in pencil].

Mytilimeria nuttalli. California. 247: (no figure). B. M., 2 syntypes, unmatched valves, nos. 51.11.17. 37-38. [Larger valve figured by REEVE, Conch. Icon. vol. 20, 1875, pl. 1, fig. 1].

Lyonsia californica. Sta. B. 248: 19 / 20. Type lost, *fide* CARPENTER (1857b, p. 194).

Periploma argentaria [=*P. planiuscula* SOWERBY, 1834]. 238: 18/ 8. B. M., 2 syntypes, Mus. Cum., without registry numbers.

Pandora punctata. Sta. B. 228: 17 / 1. B. M., 1 valve, probably figured holotype; label lost, Mus. Cum.

Purpura macrostoma. "Sta. B." (actually Hawaii).

Purpura harpa. "Sta. B." (actually Hawaii).

Purpura (Monoceros) engonatum [=*Acanthina spirata* (Blainville, 1832)]. Sta. B. 264: 20 / 17. B. M., figured holotype, 61.5.18.33. Carpenter label.

Purpura (Monoceros) brevidens [=*Acanthina spirata* (Blainville, 1832)]. Sta. B. 264: (no figure). B. M., syntype, on left side of same board as *P. engonata,* no. 61.5.18.33. [Similar to specimen from Mus. Cum. figured by Reeve, Conch. Icon., vol. 3, 1846, pl. 1, fig. 2, as *Monoceros punctatum* Gray].

Purpura (Monoceros) lapilloides [=*Acanthina spirata lapilloides*]. Sta. B. 265: 20 / 18. B. M., 15 syntypes, no. 61.5.18.32.

Murex (Cerostoma) nuttalli [*Ceratostoma*]. Sta. B. 264: 20 / 22. B. M., 2 syntypes, the larger probably figured, no. 61.5.18.39. Carpenter label.

In alluding to the undue haste with which Conrad seemed to have prepared his manuscript, Carpenter mentioned the frequency of the specific names *californica* and *nuttalli.* One should point out further that part of the latter are spelled with the ending *-i,* part with *-ii.* Under the modern Rules, the latter form is to be avoided in proposing new names, but it is not subject to automatic correction in published literature; that is, the name is to be preserved as printed. Thus, we should note that there are four of the Conrad specific names with the *-ii* ending – in the genera *Clinocardium, Sanguinolaria, Siliqua,* and *Tresus* (using present-day allocations) – and all the rest have the *-i* ending.

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LITERATURE CITED

Alden, Roland H. & John D. Ifft

1945. Early naturalists in the Far West. Calif. Acad. Sci. Occ. Pap. no. 20; 59 pp. (Nuttall, pp. 42 - 46, with portrait).

Beidleman, Richard G.

1964. Biology and the North American Wilderness. Bio-Science 14 (12): 22 - 27 (December 1964)

Carpenter, Philip Pearsall

1857a. Monograph of the shells collected by T. Nuttall, Esq. on the Californian Coast in the years 1834-5. Proc. Zool. Soc. London for 1856: 209 - 229 (26 January 1857)

1857b. Report on the present state of our knowledge with regard to the mollusca of the West Coast of North America. Rep. Brit. Assoc. Adv. Sci. for 1856, pp. 159 - 368, publ. 1857.

1864. Supplementary report on the present state of our knowledge with regard to the Mollusca of the West Coast of North America. Rept. Brit. Assoc. Adv. Sci. for 1863: 517 - 686 (August 1864)

Conrad, Timothy Abbott

1837. Description of new marine shells from Upper California, collected by Thomas Nuttall, Esq. Journ. Acad. Nat. Sci. Philadelphia 7: 227 - 268; plts. 17 - 20 (21 November 1837)

Grant, Ulysses S., IV & Hoyt Rodney Gale

1931. Catalogue of the marine Pliocene and Pleistocene Mollusca of California and adjacent regions. Mem. San Diego Soc. Nat. Hist. 1: 1 - 1036; 15 figs.; plts. 1 - 32 (3 November 1931)

Jay, John Clarkson

1839. A catalogue of shells arranged according to the Lamarckian system, together with descriptions of new and rare species contained in the collection of John C. Jay, M.D. 3rd. ed., New York. 125 pp., 10 plts.